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ABSTRACT

Carter's model of affective relations (1965) and Chaffee's research on cognitive discrepancies and communication (1959) are used to test the hypotheses that increasing an attribute's discriminatory power will increase attribute salience and that increasing the exclusiveness of an object's attributes will increase objective salience. The current literature suggests that increasing the number of attributes will increase the affect for an object. Experimental materials developed in this study had four constraints: (1) use of multi-object, multi-attribute situations (2) use of situations in which equal amounts of information were known about all of the objects; (3) use of situations in which objects could be chosen on a rational basis; and (4) use of situations in which both hypotheses could be tested simultaneously. Results suggest that increased salience leads to greater positive evaluations and that attribute salience is a function of the attribute's discriminatory power not included in Carter's model (but easily incorporated). In terms of learning theories, an exclusive discrimination becomes associated with a reward for making a good decision. (DS)

AN EXPERIMENT ON SALIENCE AS A FUNCTION OF THE DISCRIMINATORY POWER OF AN ATTRIBUTE

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AN EXPERIMENT ON SALIENCE AS A FUNCTION OF THE DISCRIMINATORY POWER OF AN ATTRIBUTE

This paper is based on Carter's model of affective relations (1965) and research on cognitive discrepancies and communication by Chaffee et al. (1969). Carter's model hypothesizes that there are two independent sources of affect for an object: 1) salience which he defines as the psychological closeness of an object to a person and 2) pertinence or the comparative degree to which an object possesses a psychologically relevant attribute. An experiment by Chaffee (1967) operationalized salience as the use of an unfamiliar Greek letter in a crossword puzzle and pertinence as the point value assigned to use of the word. As expected there were main effects on affect for the Greek letters for both operationalizations.

While Carter's model has a concept for the relation between a person and an object (salience), it does not have a concept to deal with the relation between the person and an attribute. Instead of proliferating new terms, I will use the concept of salience in two ways. Object salience will be used in the same way Carter uses salience. Attribute salience will refer to the relative importance of a particular attribute to the person.

Experimentally, Chaffee has operationalized object salience as the use of a word; Zajonc (1968) has used exposure. Both operationalizations have demonstrated increased affect. However, the empirical research on attribute salience is almost non-existent. Chaffee and Tipton (1969) conducted an experiment which showed that subjects in a two-object, two-attribute situations were just as able to decide in a situation in which one object was better on one attribute and the other object was better on the other attribute as in a situation in which one object was better than the second object on both attributes. Chaffee and Tipton suggested that "subjects were able to order attributes, so that one of the two discriminatory attributes was selected as the criterion on which to base a decision." This finding is in line with the notion that the salience of attributes

varies regardless of the comparative degree to which an object possesses the psychologically relevant attribute (pertinence). Theoretically, object affect which results from attribute information is probably due to both the comparative degree that an object possesses the relevant attribute (pertinence) and the relative importance of that attribute (attribute salience).

Like the Chaffee-Tipton study, most of the decision-making research based on dissonance theory has used two--and only two--objects. Findings in at least two studies (Brehm, 1956; Festinger, 1964) indicate a suspiciously high number of choice reversals (22 and 35 per cent) when subjects went from a condition in which they were asked to rate a series of objects to a condition in which they were to choose between one of two objects which had been rated previously in the multi-object situation. This might indicate that attribute salience varies from situation to situation. Some subjects may have used one attribute to rate the objects in the multi-object situation, and used a different attribute to decide in the two-object situation. Using a different situation, a potential car buyer might initially use price as an attribute in eliminating many of the cars available to him, but in deciding between two cars which vary little on price, he may use styling as the discriminatory attribute.

At this point it is necessary to introduce the concept of discriminatory power on an attribute which refers to the attribute's ability to distinguish between objects. Two factors affect an attribute's discriminatory power: the number of the discriminations that an attribute provides and the amount of difference between objects provided by the attribute. Carter uses the term exclusive discrimination to refer to comparisons in which objects are different on a relevant attribute; an inclusive discrimination refers to comparisons in which objects are the same on a relevant attribute. Methodologically, it is very difficult to get measures of the extent of differences between objects on a relevant attribute. Based on the propositions set forth above, I decided to

operationalize discriminatory power of attributes as the number of exclusive discriminations that an attribute provided. For example, if a person were considering buying three cars which were all blue, color of the cars would have no discriminatory power because it doesn't provide any exclusive discriminations. If one car were red and two were blue, there would be two exclusive discriminations (the red car is different from each of the two blue cars). If one car was white, one red and one blue, there would be three exclusive discriminations.

The first hypothesis to be tested is:

H_1: Increasing an attribute's discriminatory power will increase attribute salience.

The second hypothesis of this study deals with object salience. The current state of research on the relation between object affect and cognitive differentiation is not clear. Chaffee and Zajonc have shown that exposure will lead to in-increased affect. Chaffee et al (1970) have used a cross-lagged approach to show that exposure to public affairs programs will lead to an increase in political knowledge which could be viewed as a more differentiated cognitive structure. Lane and Sears (1964) have used a developmental approach to show that a person first develops an evaluative component in his cognitive structure before developing a knowledge component to support that evaluation. Zajonc (1960) has shown that a person who expects to use information will develop a more differentiated cognitive structure. The research cited above seems to imply that exposure, use, or expectation of future use will lead to increased affect and a more differentiated cognitive structure. But to date there has been little research using the number of attributes as the independent variables. One study in the person perception literature (Anderson, 1964) indicated that increasing the number of positive adjectives used to describe a person increased liking for the person described. However, a person with two posotive attributes was more highly evaluated than a person with two positive and two neutral adjectives. Although

Osgood and Tannenbaum's congruency model (1955) is not specifically intended to apply to this research, their model, which implies an averaging effect, could explain this finding. However, it should be noted that they have not found the averaging procedures to work when both the person making the statement and the object of the statement are both evaluated positively. Instead, they found that affect for both the person and the object increased (see Tannenbaum, 1968).

From the current state of the research literature, it can be assumed that increasing the number of attributes will increase affect for an object as long as the average of the attributes is not less than the initial average. It should be noted that this is somewhat at odds with the Fishbein model (1965) which postulates that the evaluation of an object is the sum of the positive and negative attributes of an object. Hasdorf et al. (1969) have indicated than an averaging model is a better predictor. But neither the averaging or summation model takes into account the relative saliences of the attributes, but merely treats all the attributes as being equal in weight.

With the exception of Anderson, all the research cited above views increased affect and cognitive structure as dependent variables. What I am suggesting is that a more differentiated cognitive structure is sufficient in itself to increase affect. In a practical application, Crest Toothpaste was able to add an attribute (endorsement by the American Dental Association) that made it different from all other toothpastes and the rise in sales might be viewed as a measure of increased affect. Attempting to turn the causal model around implies that an object that is more different will acquire increased affect simply by its being more different.

The second hypothesis to be tested is:

H_2: Increasing the exclusiveness of an object's attributes will increase object salience.

The exclusiveness of an object's attributes was operationalized as the number of exclusive discriminations that an object was involved in.

In developing experimental materials to test the two hypotheses, there were four constraints that I wanted to impose to give the findings greater external validity:

1) Use of multi-object, multi-attribute situation
2) Use of situations in which equal amounts of information were known about all of the objects
3) Use of situations in which it was possible that each object could be chosen on a rational basis
4) Use of situations in which both hypotheses could be tested simultaneously

To accomplish these goals, the minimal requirements were a three-object, four-attribute situation. One difficulty in testing the object salience hypothesis was the separation of pertinence differences of a discrimination from the discrimination itself. In other words, an object might be evaluated more highly not only because it differed more than other objects, but also because it possessed a relatively greater amount of the important attribute(s). Using Fishbein's notion that an attitude is an evaluative summary of an object's positive and negative properties, the confound of pertinence and exclusiveness of an object's attributes was separated by balancing the number of positive and negative properties of each object and by manipulating the number of exclusive discriminations independently of the value component.

As stated above, a person comes to a choice situation with his own attribute saliences, i.e. the characteristics about objects which are considered important in choosing between objects. For example, if one attribute in a choice situation is extremely important, an object which is the best on that attribute may be chosen regardless of whether it is the worst on other attributes. In attempting to take this into account, I tried to use unfamiliar situations. I also used two forms of the experimental materials to counterbalance these prior attribute saliences. This counterbalance was used to guard against the empirical possibility that the net value score for each object did not sum to zero. The

second form of the stimulus materials also allowed a test of the attribute salience hypothesis.

An example of the prototypic situation is given below:

> All three waxes cost $1.49. Wax Alpha gives a brighter shine than Wax Beta and Wax Gamma, but Wax Beta and Wax Gamma are easier to apply than Wax Alpha. Of the three waxes, the shine of Wax Alpha is the longest lasting; the shine of Wax Gamma is the shortest lasting. Of the three products, Wax Gamma is the most resistant to detergent washing; Wax Alpha is the least resistant.

Value scores in the above situation are shown in Figure 1.

FIGURE 1

Value Scores

	Object Alpha	Object Beta	Object Gamma
A_1	(++)	(-)	(-)
A_2	(--)	(+)	(+)
A_3	(++)	(+-)	(--)
A_4	(--)	(-+)	(++)
Net Value Score	0	0	0

Using the above example, Figure 2 shows how the independent variables were assigned.

FIGURE 2

Number of Exclusive Discriminations

	Object Alpha	Object Beta	Object Gamma	Discriminatory Power of the Attribute
A_1	2	1	1	Low
A_2	2	1	1	Low
A_3	2	2	2	High
A_4	2	2	2	High
Exclusiveness of an Object's Attributes	High	Low	Low	

Figure 3 shows the counterbalanced form of the questionnaire in which the evaluative signs of Figure 1 and independent variables of Figure 2 were reversed.

FIGURE 3

Counterbalanced Form of Questionnaire

Value Scores

	Object Alpha	Object Beta	Object Gamma	Discriminatory Power of the Attribute
A_1	(--)	(-+)	(++)	High
A_2	(++)	(+-)	(--)	High
A_3	(--)	(+)	(+)	Low
A_4	(++)	(-)	(-)	Low
Net Value Score	0	0	0	
Exclusiveness of an Object's Attributes	High	Low	Low	

An additional counterbalance was built in by rotating the use of Object Alpha, Object Beta, and Object Gamma in each of the forms. This counterbalance was accomplished in the collation of the questionnaire. This eliminated a primacy effect explanation for the name of the object.

As stated earlier, there were two forms of the experimental materials. Subjects received either Experimental Form X or Experimental Form Y. Each form included four problems. Each problem represented a different order of presenting the object-attribute information. Thus the order of whether good information preceded bad information about the most different object and the order of discriminatory power manipulation were rotated for each subject in each form.

The manipulation of the attribute salience hypothesis was straightforward: the attributes that were in the low discriminatory power condition of Experimental

Form X were in the high discriminatory power condition of Experimental Form Y, and vice versa. The object salience hypothesis was somewhat similar. The attribute's discriminatory power and value component for the object involved in the most exclusive discriminations were reversed between forms. For example, if an object was best (high discriminatory power) on Attribute One in Experimental Form X, it was worse (low discriminatory power) on the same attribute in Experimental Form Y.

RESULTS

The results of the attribute salience hypothesis are summarized in Tables 1-4. Ten of the 16 attributes were more salient in the high discriminatory power condition. The overall mean difference was only .13 (although this was significant at the .05 level using a one-tailed t-test). The original plan called for using a three-way mixed model analysis of variance using test form, subjects and discriminatory power of the attribute as the factor variables. However, a two-way analysis of variance summarized in Table 4 shows a significant interaction between test form and the discriminatory power of an attribute. Since the analysis for main effects assumes no interaction, the effects of discriminatory power were analyzed separately for the two test forms. In Experimental Form X, the main effect of discriminatory power was significant at the .001 level. In Form Y, the effect of discriminatory power is opposite to the prediction but is not significant.

One explanation of these somewhat ambiguous results might be the operation of a ceiling effect on attribute salience. Assuming that both pertinence and the discriminatory power of an attribute affect attribute salience, a highly pertinent attribute might obscure the effect of increased discriminatory power. Thus if the set of attributes in the high discriminatory power condition of Test Form X (the same set of attributes is in the low discriminatory condition of Text Form Y)

was highly pertinent to begin with, the effects of increasing attribute discriminatory power might yield results similar to those obtained. Likewise, the attributes in the low discriminatory power condition of Test Form X may have been less pertinent but increasing the discriminatory power of these attributes as was done in Form Y does produce the hypothesized effect. Only further research will be able to determine whether this explanation is plausible.

The results of the object salience hypothesis are summarized in Tables 5 and 6. The object involved in the high discriminatory power condition was chosen 27 per cent of the time in Test Form X and 77 per cent of the time in Test Form Y. Overall, the objects involved in more exclusive discriminations were chosen 47.1 per cent of the time (See Table 6). For the individual problems, the percentage favoring the object involved in more exclusive discriminations ranged from 43.1 to 52.9 per cent. If the net value hypothesis were true independently of the object salience hypothesis, each object would be chosen one-third of the time. Object B and Object C were combined in the low "exclusiveness of an object's attributes" condition because they were involved in an equal number of exclusive discriminations. The net value hypothesis would predict that they would be chosen two-thirds of the time. A test of proportions was used as the null hypothesis and rejected in three of the four problems. The overall test was significant well beyond the .001 level. In no problem was the direction of the prediction incorrect. The data clearly support the object salience hypothesis. In Experimental Form Y, the value direction of the more pertinent attributes seems to have been "stacked" in favor of the predicted object. Since the value direction was reversed in Test Form Y, any effects of the value direction were balanced out. It should be noted that for Problem 2 which dealt with radios that the difference between the two test forms was considerably less than the other three problems. This might be due to a better balance between the positive and

negative attributes or it might be due to the subjects being more familiar with radios than with the other three products which were car wax, waffle irons and interior paints.

SUMMARY AND CONCLUSIONS

One of the most widely researched areas in social psychology has been the general problem of how objects, persons and ideas acquire affect. Clearly, communication is central to many of these processes. Carter views affect as the result of the psychological closeness of an object to a person and the comparative degree to which it possesses a relevant attribute. Past experimental research has shown that exposure and use will increase affect. For the most part, advertising strategies have largely been based on this notion, i.e. that the more often the audience is exposed to your product, the more they will like it. The other source of affect--the comparative degree to which an object possesses a relevant attribute--has only recently been used by advertisers. This is probably because most advertisers believe that mentioning the name of their competitors' product would be counter-productive. Many politicians operate under that same theory that mentioning an opponent by name is giving him free publicity that may work against the politician s own exposure. Politicians and advertisers who choose to mention their opponent or competitor by name almost invariably emphasize those stands on the issues or product qualities which are possessed to a greater extent by their candidacy or product than those of their opponent or competitor.

Carter views object salience as a rather stable variable that can be incrementally increased by increasing exposure. The results of this experiment indicated a qualification to that view. In this study it could be argued that the exposure was the same for each object. The other source of value--pertinence--is controlled for by reversing the value direction of the attributes. But the observed value of object salience was not the same for each object.

One explanation may be that salience for objects is less trans-situational than Carter's model would indicate. The general theoretical notion is that an object that is important to a person forces the person to learn many attributes about the object so he can respond in different ways to various objects in that object class. The reason that an object is important is often left unanswered or relies on an environmental explanation. I am suggesting that the reverse process might be true, i.e. adding attributes increases salience (in the single object case). In the multi-object case, an object that is "more different" or which possesses attributes that are more exclusive, will be more salient. The question of whether this process works only for a zero-sum net value situation was not answered in this study and should be pursued in future research.

A substantive amount of research indicates that increased salience leads to an increased positive evaluation. The operationalization of object salience in this study as the percentage of choices of the recommended product was based on that assumption. However, it may be that salience is related to evaluation in a curvilinear relationship. If this were the case, objects that were "more different" would be more positively evaluated when the object's attributes were positive, and more negatively evaluated when the object's attributes were negative. Further research should examine this possibility.

Another way of looking at the object salience hypothesis is to view it in terms of risk-handling or conflict reduction. A person comes to the choice situation with his own saliences for various attributes. When he is confronted with several objects, he invokes the most highly salient attribute to see whether it will discriminate between the objects. If two or more objects are rated the same and the most positive on that attribute, the person will invoke the next most salient attribute to see whether it will discriminate between the objects. The person will continue this process until he can reach a decision. Using this

stage model, the probability that the most highly valued object will be involved in more exclusive discriminations is increased.

In the case of the attribute salience hypothesis, I suggested that attributes which discriminate between objects are more apt to provide a payoff for differential responses to the exclusive discriminations. This reinforcement increases the likelihood that the person will invoke that attribute in a similar situation when the evaluative (multi-object) mode is called for. An attribute that discriminates well between objects, reduces uncertainty and provides information that is useful in decision-making.

In terms of learning theory, an exclusive discrimination can be viewed as a stimulus that defines an occasion on which a response will be reinforced. The decision a person makes can be viewed as a response. Good decisions often are followed by some kind of pleasurable outcome for the person or what learning theorists call "reinforcers." A "secondary reinforcer" is any stimulus which derives its reinforcing properties from association with a primary reward. In this light, an exclusive discrimination becomes associated with a reward for making a good decision. Attributes that provide exclusive discriminations are reinforced by the pay-offs of good decisions.

This reinforcement makes the attributes more salient. Attributes that do not discriminate between objects are not reinforced. Since a person is reinforced for responding to exclusive discriminations and not inclusive discriminations, he learns to discriminate between responses appropriate for a given occasion.

Miller and Dollard (1941) have applied general learning theory to the social setting. They view four concepts as being important for social learning: drive, cue, response and reward or reinforcement. They define drive as a strong stimulus which impels a response. Cues are distinctive stimuli which will determine which response will be made and when it will be made. In terms of communication, uncertainty is often the stimulus which impels a person to respond.

As Miller and Dollard point out, cues associated with drive reduction take on reward value. Since attributes which provide exclusive discriminations provide information which reduces uncertainty, they can be viewed as having reward value.

In the Results section, I hypothesized that initially high salience was obscuring the effect of an attribute's discriminatory power on the attribute salience. It is not difficult to conceive of an experiment in which initial attribute salience could be manipulated by telling the subject that the attribute was either important or unimportant and crossing this manipulation with the discriminatpry power of the attribute. Using four problems, each subject could be tested in all four conditions. The proposition advanced in this study that attribute salience is a function of the attribute's discriminatory power is not specifically included in Carter's model but it could easily be incorporated. Pursuing the discriminatory power of an attribute as a source of attribute salience seems a logical next step in the research as a ripe area for developing the model more fully.

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ATTRIBUTE SALIENCE HYPOTHESIS

Table 1

Mean Scores

Experimental Form	Discriminatory Power		Across Discriminatory Power
	Low	High	
X	5.33 (n=176)	5.75 (n=176)	5.54 (n=352)
Y	5.93 (n=232)	5.80 (n=232)	(n=464)
Across Experimental Form	5.59 (n=408)	5.78 (n=408)	(n=816)

Table 2

Effect of Test Form and Discriminatory Power of Attributes on Attribute Salience

Analysis of Variance

Source	d.f.	S.S.	M.S.	F-ratio	p
Test Form (TF)	1	21.7	21.7	*	
Discriminatory Power (DP)	1	4.1	4.1	*	
TF x DP	1	15.1	15.1	5.01	.05
Within Cells	812	2442.3	3.0		
Total	816	2485.8			

*Calculation of these F-ratio is not included because the test for TF and DP main effects assumes no interaction.

Table 3

Analysis of Variance of Attribute Discriminatory Power on Attribute Salience in Test Form X

Source	d.f.	S.S.	M.S.	F-Ratio	p
Discriminatory Power (DP)	1	20.3	20.3	11.8	.001
Subjects (S)	28	197.3	7.0		
DP x S	28	47.9	1.7		
Total	57	265.5			

Table 4

Analysis of Variance of Attribute Discriminatory Power on Attribute Salience in Test Form Y

Source	d.f.	S.S.	M.S.	F-Ratio	p
Discriminatory Power (DP)	1	1.5	1.5	1.47	n.s.
Subjects (S)	21	192.3	9.1		
DP x S	21	21.3	1.0		
Total	43	215.1			

OBJECT SALIENCE HYPOTHESIS

Table 5

Experimental Form X: Object Choice Recommendation in Four Problems (n=29)

Exclusiveness of Object's Attributes	PROB A	PROB B	PROB C	FROB D	OVERALL
High	27.6%	41.4%	24.1%	13.8%	26.7%
Low	73.4%	58.6%	75.9%	86.2%	73.3%

Experimental Form Y: Object Choice Recommendation in Four Problems (n=22)

High	63.7%	50.0%	90.9%	90.9%	77.4%
Low	36.3%	50.0%	9.1%	9.1%	22.6%

Cell entries are percentage of objects chosen in specified condition.

OBJECT SALIENCE HYPOTHESIS

Table 6

Combined Object Choice Recommendation in Both Forms,

Z-scores and Probabilities

Problem Number	Exclusiveness of Object's Attributes		Z-score*	p.
	High	Low		
1 (n=51)	43.1%	56.9%	1.49	.07
2 (n=51)	45.1%	54.9%	1.78	.04
3 (n=51)	52.9%	47.1%	2.98	.01
4 (n=51)	47.1%	52.9%	2.83	.01
Overall (n=204)	47.1%	52.9%	4.31	.001
Expected by chance	33.3%	66.7%		

* Using normal curve approximation to the binomial.